



# South Carolina Department of Transportation

## Structural Efficiencies Study – Executive Summary

---

Submitted by:     The Conti Group LLC  
                         KPMG LLP  
                         The Kercher Group, Inc.

December 7, 2017



# Profile



## **South Carolina Department of Transportation**

The South Carolina Department of Transportation (SCDOT or the Agency) is one of the five largest state agencies in South Carolina, with approximately 4,600 employees and a total annual budget of approximately \$2.36 billion for Fiscal Year 2017-18. SCDOT has a presence in each of the State's 46 counties with the central office located in Columbia. Among state Departments of Transportation (DOTs) in the United States, South Carolina is ranked 40th in the number of square miles (32,020 sq. miles). However, according to the Federal Highway Administration (FHWA), SCDOT is responsible for maintaining the fourth-largest state-maintained highway system in the nation with approximately 41,000 miles of roads (90,000+ lane miles) and more than 8,400 bridges. SCDOT is organized into seven highway engineering districts headed by a District Engineering Administrator (DEA). The Agency's purposes include planning, construction, maintenance, and operation of the state highway system, and development of a statewide intermodal and freight program.

A State Transportation Commission (the Commission) composed of nine members—one member for each Congressional District and two at-large members—is the governing authority of SCDOT, while the Secretary of Transportation (the Secretary) is the Chief Administrative Officer of SCDOT. The Secretary is appointed by the Commission, with the advice and consent of the Senate. The Secretary is charged with the affirmative duty to carry out the policies of the Commission and to administer the day-to-day affairs of SCDOT. The Secretary represents the Agency in coordination with other State agencies, local governments, special districts, other states, and the federal government.



# Overview

## **Project Overview – Background, Team, and Objectives**

Like many other government agencies and state DOTs across the country, SCDOT is operating in a resource-constrained environment and must constantly strive to utilize funding and staff resources more efficiently and effectively. In 2015 and 2016, at the request of members of the General Assembly, the Legislative Audit Council (the LAC) undertook an audit of SCDOT's operations from Fiscal Year (FY) 2005–06 through FY 2014–15. The audit culminated in the publication of a report in April 2016 that included more than 140 agency-specific recommendations.

The South Carolina General Assembly in the FY 2016–17 budget provision directed the Agency to conduct an assessment of its internal structure and key functions related to project identification, selection, and prioritization, and make recommendations on improvements that would enable SCDOT to operate more effectively and more cost-efficiently. The Project Team, consisting of The Conti Group LLC (Conti Group), KPMG LLP (KPMG), and the Kercher Group, was selected in Spring 2017 to conduct the Structural Efficiencies Study (the Study or Project). The objective of the Study was to evaluate SCDOT's internal structure as it relates to the delivery of services for which it is responsible with the goal of increasing the efficiencies and cost-effectiveness of the Agency, particularly in the areas of project prioritization and selection; project delivery; relationships with other South Carolina transportation entities; and technology and information management systems supporting the core functions of the Agency. Through the analysis presented in this report, the Project Team identified industry leading practices and areas of improvement to effectively utilize statewide transportation funding to better address South Carolina's transportation needs.

# Scope

The Study included seven key areas of focus as described below in order to achieve SCDOT's overarching goal of increasing the efficiency and cost-effectiveness of the Agency:

Section	Scope
1. Strategic Plan	This section of the report compares SCDOT's strategic plan and associated performance measures with its peer group to identify potential improvements to SCDOT's strategic plan and performance measures. Peer agencies included: Georgia Department of Transportation (GDOT), Missouri DOT (MODOT), North Carolina DOT (NCDOT), Pennsylvania DOT (PennDOT), Virginia DOT (VDOT), and West Virginia Dot (WVDOT).
2. Organizational Structure	This section of the report compares SCDOT's internal structure against its peer to improve delivery of transportation services, identify industry leading practices, and assess potential enhancements that can be incorporated by SCDOT to improve its organizational structure.
3. Project Prioritization and Selection	This section of the report compares SCDOT's project prioritization and selection process with that of its peer group to identify potential improvements, including recommendations to improve external stakeholder communications related to prioritization.
4. Project Delivery	This section of the report evaluates the roles, responsibilities, decision-making steps, outsourcing strategy, and accountability for project delivery at SCDOT. This analysis includes an assessment of the suitability of project management tools currently in use and evaluation of SCDOT's performance standards for project delivery to those employed by the peer group.
5. Relationships with other South Carolina Transportation Entities	This section of the report evaluates SCDOT's role and relationships with other transportation agencies in South Carolina, including Metropolitan Planning Organizations (MPOs), Councils of Government (COGs), and County Transportation Committees (CTCs) in terms of project prioritization and selection, project delivery, and SCDOT's project design and management fee structure. In addition, this section identifies leading practices from the peer group that may improve SCDOT's efficiency and cost-effectiveness in utilizing statewide transportation funding to address its key needs.
6. Technology and Information Management Systems	This section of the report evaluates SCDOT's existing technology and information management systems for suitability and effectiveness as they relate to the delivery of services, such as project management and maintenance management, as well as the systems supporting overall Agency performance management.
7. Transportation Funding	This section of the report compares the State's transportation funding with its peer group to identify opportunities for cost savings and recommend alternatives based on leading practices that would increase the effectiveness of Statewide transportation spending.



# Approach

In support of the Study, the Project Team conducted a series of meetings, workshops, and interviews with SCDOT leadership, senior management, key stakeholders (i.e., MPOs, COGs and local governments), and SCDOT personnel to review and evaluate current workings and processes within SCDOT. They also performed the corresponding analysis of the Agency's current policies, procedures, and processes as they relate to SCDOT's strategic plan, internal organizational structure, project prioritization and selection, project delivery, relationships with other transportation entities in South Carolina, technology and information management systems, and transportation funding. In addition to the aforementioned meetings, workshops, and interviews conducted, the Project Team also reviewed material, information, and data provided by SCDOT—including South Carolina Directives and Legislation and the LAC report dated April 2016—to provide contextual understanding of the relevant legislations, as well as background and data points related to the primary focus areas for this Study.

Next, the Project Team conducted interviews, meetings, and a benchmarking exercise with a peer group of comparable transportation entities to identify potential gaps between leading practices and SCDOT's current practices in order to develop recommendations and a road map toward improving existing processes and achieving improved organizational efficiencies and cost-effectiveness.



# Key recommendations

The assessment of SCDOT's strategic plan, organizational structure, project prioritization and selection, project delivery, relationships with other transportation entities in South Carolina, technology and information management systems, and project funding identified a number of improvement opportunities to further enhance SCDOT's organizational efficiencies and enable the Agency to operate more effectively and cost-efficiently. A summary of key recommendations as set forth in each of the chapters from the report are summarized in the table below. A full discussion of each of these recommendations—as well as the key findings that support each recommendation—is contained in the full Report.

Recommendation (Report Section #)	Summary of Recommendation
<b>2. Organizational Structure</b>	
<b>2.1 Implement a Target Operating Model</b>	SCDOT leadership recognizes that business as usual will not achieve the Agency's stated goals and objectives. The current environment presents SCDOT with an opportunity to assess the suitability of its operating model to effectively deliver its priorities. The Project Team recommends that SCDOT implement a Target Operating Model (TOM) plan to align key elements that are integral to achieving sustainable results (i.e., processes and work flows, decision making, information flows, performance metrics, and roles and responsibilities).
<b>2.2 Revise the current organizational structure</b>	The anticipated increase in the volume of work due to passage of the Roads Bill requires SCDOT to reconsider its operational strategies and restructure the way it is currently organized to enhance project development and project delivery capabilities. The Project Team recommends that SCDOT revise the current organizational structure, reporting relationships, span of control, core functions, and workload and staffing levels to determine an approach tailored to the Agency's vision and strategic goals.
<b>2.3 Enhance SCDOT's existing KPIs and management reports</b>	Presently, the Agency uses seven primary measures to assess its performance in several categories: manpower, procurement, project delivery, expenditures, maintenance response, maintenance risk management, and planning. The Project Team's review of the performance measures reported by the peer group indicated that SCDOT has an opportunity to expand the list of performance measures that include both quantitative and qualitative measures, as well as secondary measures that are important in emphasizing the valuable contributions SCDOT is making to the State's economy and quality of life of its citizens.
<b>2.4 Formalize a Talent Management Plan</b>	Approximately 350 SCDOT senior and mid-level staff are eligible to retire over the next three to five years. Additionally, vacancy rates for front-line positions (i.e., maintenance workers) have remained at 10 percent or higher for the past several years. The Project Team recommends that SCDOT develop a Talent Management Plan to enhance current practices and programs associated with attracting, developing, and retaining skilled employees.
<b>3. Project Prioritization and Selection</b>	
<b>3.1 Align program funding and selection process with SCDOT strategic goals</b>	The TAMP is an industry-leading asset management tool whose output will help SCDOT to better manage the long-term maintenance of its transportation assets. It is recommended that SCDOT continue to leverage the TAMP when allocating funding to its Program Categories, regardless of past funding levels. Using this approach to program-wide funding will allow SCDOT to prolong the useful life of its entire transportation network, while verifying capital spending allocation is aligned with SCDOT's strategic goals.

Recommendation (Report Section #)	Summary of Recommendation
<b>3.2</b> <b>Develop a standardized and integrated project prioritization process</b>	<p>To help ease the administrative burden on SCDOT and local entities and reduce the risk of errors, it is recommended that SCDOT develop an automated prioritization system of record to manage the prioritization process. The system should also, to the extent possible, calculate all prioritization scores. This would help to substantially reduce the risk of human error in the development of the prioritization lists.</p>
<b>3.3</b> <b>Improve transparency of the project prioritization and selection process</b>	<p>SCDOT's prioritization Engineering Directives serve as the baseline information source for the process underlying project selection for each Program Category. Given their importance for defining the prioritization process, the Project Team recommends SCDOT further refine its Engineering Directives to convey a more comprehensive view of the prioritization process for each Program Category in a manner that can be easily understood by stakeholders.</p>
<b>3.4</b> <b>Incentivize MPOs/COGs to promote projects that align with SCDOT strategic goals</b>	<p>Projects that are being advanced by the MPOs and COGs under the Guideshare program often do not help SCDOT meet its strategic goals and system performance requirements. In general, these projects are smaller in nature and are locally focused. It is recommended that SCDOT incentivize MPOs and COGs to promote projects that better align with SCDOT's strategic goals by communicating the importance of the Strategic Freight Network and National Highway System (NHS), as well as aligning local, County, and State-level planning initiatives.</p>
<b>4. Project Delivery</b>	
<b>4.1</b> <b>Increase the role, authority and structure of the Project Delivery Office</b>	<p>The Project Team recommends that as SCDOT revise its organizational structure and defines a TOM, the Agency should consider combining key project delivery-focused resources from the various business units/departments into a formal, stand-alone Project Delivery Office. This action is intended to improve coordination among various business functions, increase accountability and transparency, and support efficient project delivery processes. Consideration should be given to establish an Alternative Project Delivery (APD) section with the Project Delivery Office.</p>
<b>4.2</b> <b>Evaluate trade-offs between project delivery methods</b>	<p>SCDOT has demonstrated that the Design-Build (DB) procurement method has resulted in improving on-time delivery of projects; however, no comparisons are currently available to confirm that DB procurement also results in cost savings. The Project Team recommends that SCDOT conduct its own evaluation to determine if the DB procurement has any advantages as compared to traditional project delivery.</p>
<b>4.3</b> <b>Develop an outsourcing strategy to deliver the growing volume of capital programs</b>	<p>The Project Team's review of the project delivery process indicated that SCDOT's outsourcing program for preconstruction activities—namely the on-call and turnkey/project-specific contracts—could be a potential source of additional resources to help SCDOT address growing demands for project delivery resources. The Project Team recommends that SCDOT develop a formal procedure to decide early during the project delivery process whether or not to outsource activities for delivery of planned projects. The formal decision-making process should be driven by a framework that will help SCDOT project managers make a go/no-go decision on outsourcing early in the project delivery process.</p>

Recommendation (Report Section #)	Summary of Recommendation
<b>4.4</b> <b>Expand the use of an APD program for appropriate projects to address growing capital program</b>	<p>The Project Team recommends that SCDOT expand its current screening process to include the systematic screening of planned capital projects (i.e., projects included in the STIP) worth \$50 million or higher (\$25 million or higher if projects are bundled) and/or projects that meet predefined complexity requirements. This action will build on the robust process SCDOT has already developed and help to streamline the project evaluation time line for APD candidate projects and further accelerate the overall project delivery process.</p>
<b>4.5</b> <b>Work in partnership with industry participants to augment market capacity</b>	<p>The Project Team recommends that SCDOT create a favorable environment to attract new market entrants and enhance the current partnership with industry participants to increase market capacity, capitalizing on the goodwill generated from the positive working relationship SCDOT has with the industry. SCDOT should continue its strong partnership with industry participants, allowing SCDOT to ensure that there is adequate market capacity available to meet the growing demand of the Agency's capital program.</p>
<b>5. Relationships with Other South Carolina Transportation Entities</b>	
<b>5.1</b> <b>Collaborate to develop an aligned strategy for the transportation program</b>	<p>The Project Team recommends that SCDOT collaborate with local agencies for the strategic and long-range planning processes to channel available transportation funding towards achieving the strategic goals.</p>
<b>5.2</b> <b>Enhance engagement of Districts with local government agencies</b>	<p>The Project Team recommends SCDOT emphasize Districts' roles in executing the Strategic Plan and TAMP goals; encourage Districts to engage in the planning and prioritization process with local governments, including counties, MPOs, and COGs; and explore the feasibility of Districts serving as a "clearing house" for inquiries, work requests, permitting, and project plan reviews requested by the local governments.</p>
<b>5.3</b> <b>Improve the process for review and approval of plans submitted by local governments</b>	<p>SCDOT should initiate a joint SCDOT/local agency task force to document concerns of all parties and develop a proposed framework for streamlining plan review and approval processes. While SCDOT has final decision-making authority, the Agency should evaluate the feasibility of establishing a pool of prequalified engineering firms to augment SCDOT staff to perform plan reviews.</p>
<b>5.4</b> <b>Leverage the capabilities of local governments to perform or supplement maintenance work on SCDOT's secondary roads</b>	<p>SCDOT should evaluate the feasibility and potential benefits of contracting with local governments (i.e., Counties and Cities) utilizing the increase in C funds included in the Roads Bill to perform maintenance activities on SCDOT secondary roads. The Project Team recommends that this approach first be tested through a pilot project. Furthermore, SCDOT should evaluate options for divesting ownership or maintenance responsibility of non- federal aid secondary roads to the Counties/Cities while the General Assembly should consider providing funding support.</p>
<b>5.5</b> <b>Expand the benefits of asset management beyond the boundaries of SCDOT</b>	<p>SCDOT should sponsor workshops for introducing the concepts of asset management and the potential benefits of developing County-appropriate plans to add value to the C Program. SCDOT should share details of its recently developed TAMP and the expected long-term infrastructure benefits by transitioning to a more data and performance-driven decision-making process. In addition, SCDOT should promote the use of data-driven methodologies for quantifying infrastructure needs and improving the project selection and prioritization process for the use of C Program funds.</p>
<b>6. Technology and Information Management Systems</b>	
<b>6.1</b> <b>Develop an Asset Management Systems Strategic Plan</b>	<p>To address a number of opportunities for improvement, the Project Team recommends that SCDOT take a holistic view on creating robust asset management capabilities within the Agency to meet and exceed requirements and targets such as MAP-21 and the FAST Act. SCDOT should ensure that requirements for the upcoming Asset Management Systems Replacement RFP match the Agency's long-term strategic direction.</p>

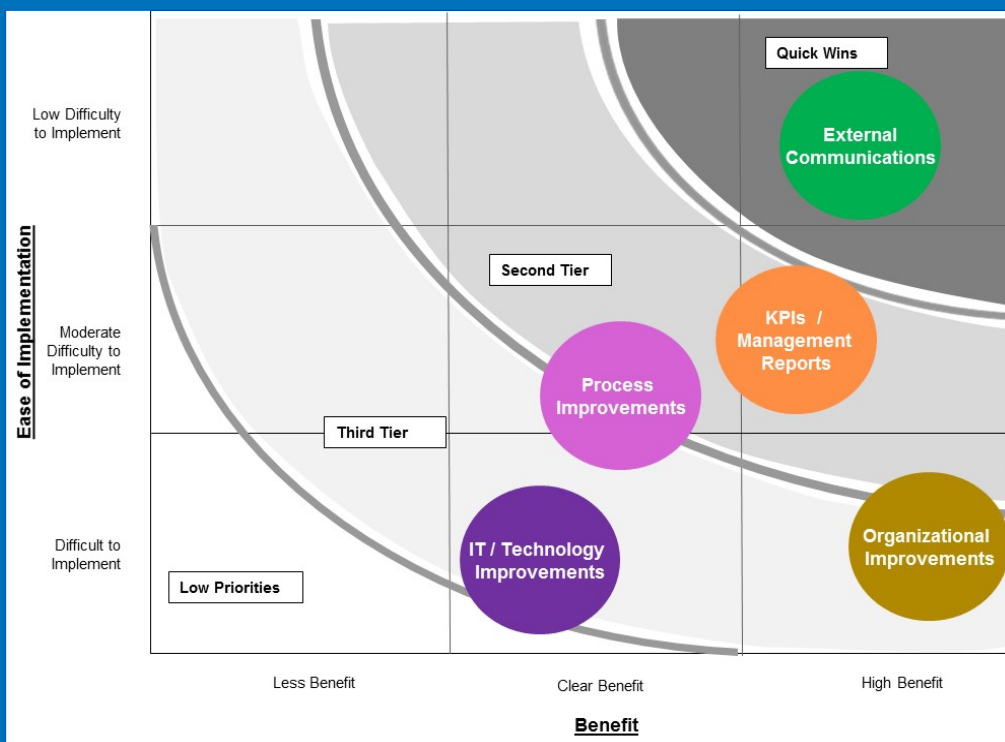


Recommendation (Report Section #)	Summary of Recommendation
<b>6.2</b> <b>Develop an integrated Project Delivery Management System</b>	<p>The Project Team recommends that SCDOT develop an automated prioritization system of records to manage the prioritization process for STIP development for pavement and bridge projects. To this end, the Agency should implement new and/or enhance current systems to accommodate the growing pipeline of projects from initial generation (e.g., from source pavement and bridge management systems), through further prioritization and approval processes, to a formalized the STIP database repository that includes eSTIP.</p>
<b>6.3</b> <b>Re-engineer current cash flow processes and tools to increase automation</b>	<p>The Project Team recommends that SCDOT streamline the cash flow reporting process by implementing more standardized systems and business processes for cash flow management to reduce the need for manual analysis. Consideration should be given to develop automated integration with upstream data sources to reduce manual input, resulting in reduced reliance on individual personnel to input and analyze data.</p>
<b>6.4</b> <b>Reassess current strategic dashboards in light of the new strategic goals</b>	<p>In light of the Agency's new strategic goals and objectives, SCDOT should consider revising the KPIs currently used to measure progress towards strategic goals to ensure that they continue to remain relevant. In addition to displaying current performance status on SCDOT's public-facing dashboards, consideration should be given to display trends over a period of time to better communicate progress toward achieving SCDOT's strategic goals.</p>
<b>6.5</b> <b>Develop a strategic plan for increasing mobile data collection</b>	<p>The Project Team recommends that SCDOT develop a strategic plan for increasing mobile data collection in areas such as field inventory data collection (for assets such as small culverts that are not visible from automated data collection vehicles), field inspection and condition survey data collection, and at least maintenance time entry, location, and accomplishment data collection.</p>
<b>7. Transportation Funding</b>	
<b>7.1</b> <b>Evaluate maintenance requirements in the context of planned improvements under the 10 Year Plan</b>	<p>The Project Team recommends that SCDOT evaluate maintenance requirements of each District in the context of planning improvements under the 10 Year Plan and the Strategic Plan goals for resurfacing and pavement preservation projects. With additional funding and increased focus on resurfacing activities, SCDOT should gradually transition from reactive to proactive, planned maintenance. Performance-based maintenance (PBM) can serve as a framework to help facilitate this shift, allowing for more informed and evidenced-based decisions on where to allocate limited maintenance effort, as well as demonstrate the downstream impacts of maintenance expenditure on network performance.</p>
<b>7.2</b> <b>Right-size fleet services to optimize SCDOT's fleet portfolio</b>	<p>SCDOT has an opportunity to potentially reduce its fleet service costs through a right-sizing initiative. As part of this process, SCDOT should examine the fleet compositions of various Districts and identify vehicles/mechanical units that are deemed to be underutilized. Right-sizing the fleet inventory will help SCDOT increase fleet utilization and reduce costs.</p>
<b>7.3</b> <b>Implement a strategic sourcing initiative</b>	<p>SCDOT has an opportunity to reduce procurement costs through the implementation of a strategic sourcing initiative. Aggregation of spend, and competitively bidding those categories is expected to result in cost savings over a period of time.</p>

# Implementation considerations

While the Study's focus areas were diverse—and the recommendations have been tailored to the specific needs and opportunities identified in each of the Study focus areas—each of the recommendations made throughout this report fall into five broad classifications. These classifications are:

- **External communications:** Recommendations that are focused on improving SCDOT's communications with other transportation entities and external stakeholders.
- **IT/technology improvements:** Recommendations that are focused on improving the way SCDOT manages its business in terms of technology, management systems, and data.
- **KPIs and management reports:** Recommendations that are focused on helping SCDOT to improve how the Agency tracks KPIs and links KPIs to management and execution of its core responsibility of providing a safe and reliable transportation network.
- **Organizational improvements:** Recommendations that are intended to help SCDOT to optimize the organizational structure and delivery of transportation services.
- **Business process improvements:** Recommendations that are designed to help SCDOT enhance key business processes, and review and approve work streams and program functions to ensure that the Agency achieves its strategic objectives.



This diagram presents the potential trade-offs between implementation costs and benefits of recommendations presented in the report.

While the specifics of each recommendation will vary, recommendations focused on external communications tend to offer the greatest benefit relative to implementation costs. KPIs/management report recommendations are similar; however, the process for tracking and reporting KPIs could increase its implementation complexity. While organizational improvements—those focused on driving improvements to SCDOT's organizational structure—have the highest benefit, they

also tend to be difficult to implement, considering the number of employees, business processes, and policies involved in delivering transportation services. Technology and management systems improvements and business process improvements have clear benefits; however, technology improvements, such as procuring/developing and implementing new systems, can become very expensive, both in terms of systems acquisition as well as ongoing operational/maintenance costs.







# Contact

## Gene Conti

### ***President, The Conti Group***

The Conti Group, LLC  
400 Polk Street  
Raleigh, NC 27604  
[gene@thecontigroupllc.com](mailto:gene@thecontigroupllc.com)

T (919) 821-0290

M (919) 345-8764

## Raj Shelat

### ***Director, KPMG LLP***

1801 K Street NW  
Washington, DC 20036  
[rajshelat@kpmg.com](mailto:rajshelat@kpmg.com)

T (703) 286-6706

M (410) 908-1252